

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-51 (Canceled).

Claim 52 (New): A component of a turbine engine, comprising:

a main body having a portion to be processed;

a protective coating coated on the portion, the protective coating including one or more oxidation-resistant metals and one or more ceramic materials, the oxidation-resistant metals being selected from the group consisting of NiCr alloys and M-CrAlY alloys, wherein M represents one or more metal elements selected from the group consisting of Co and Ni, and being formed by processing the portion as a workpiece of an electric spark machine with a tool electrode including the oxidation-resistant metals and the ceramic materials.

Claim 53 (New): The component of claim 52, wherein the ceramic materials are selected from the group consisting of cubic BN, TiC, TiN, TiAlN, TiB₂, WC, SiC, Si₃N₄, Cr₃C₂, Al₂O₃, ZrO₂-Y, ZrC, VC and B₄C.

Claim 54 (New): The component of claim 52, wherein the portion is selected from the group consisting of a tip end portion of a turbine rotor blade, a pressure sidewall of a rotor blade, a suction sidewall of a rotor blade, and a tip seal of a shroud.

Claim 55 (New): The component of claim 52, further comprising:

a base coating interposed between the portion and the protective coating, the base coating including SiC formed by processing the portion as a workpiece of an electric spark machine with a tool electrode of Si in a liquid including alkane hydrocarbons.

Claim 56 (New): A method for production of a surface-treated component of a turbine engine, comprising:

applying a compressed powder of a mixture including one or more oxidation-resistant metals and one or more ceramic materials as a tool electrode; and

forming a protective coating on a portion of an untreated component by processing the portion as a workpiece of an electric spark machine with the tool electrode.

Claim 57 (New): The method of claim 56, wherein the oxidation-resistant metals are selected from the group consisting of NiCr alloys and M-CrAlY alloys, wherein M represents one or more metal elements selected from the group consisting of Co and Ni, and the ceramic materials are selected from the group consisting of cubic BN, TiC, TiN, TiAlN, TiB₂, WC, SiC, Si₃N₄, Cr₃C₂, Al₂O₃, ZrO₂-Y, ZrC, VC and B₄C.

Claim 58 (New): The method of claim 56, further comprising:

forming a second protective coating on the protective coating and a second portion of the component defining the protective coating by any method selected from the group consisting of an aluminizing treatment, a chromizing treatment, CVD, and PVD.

Claim 59 (New): A component of a turbine engine produced by the method of claim 56.

Claim 60 (New): A component of a turbine engine, comprising:

- a main body having a portion to be processed;
- a base coating coated on the portion;
- an intermediate coating coated on the base coating, the intermediate coating including one or more filler materials selected from the group consisting of SiC and MoSi₂; and
- a protective coating coated on the base coating and the intermediate substance, the protective coating including one or more protective materials selected from the group consisting of oxide ceramics, cubic BN, and oxidation-resistant metals, and being formed by processing the portion as a workpiece of an electric spark machine with a tool electrode.

Claim 61 (New): The component of claim 60, wherein the oxidation-resistant metals are selected from the group consisting of NiCr alloys and M-CrAlY alloys, wherein M represents one or more metal elements selected from the group consisting of Co and Ni.

Claim 62 (New): The component of claim 60, wherein the portion is selected from the group consisting of a tip end portion of a turbine rotor blade, a pressure sidewall of a rotor blade, a suction sidewall of a rotor blade, and a tip seal of a shroud.

Claim 63 (New): The component of claim 60, wherein the base coating is formed by processing the portion as a workpiece of an electric spark machine.

Claim 64 (New): The component of claim 60, wherein the intermediate coating is formed by any process selected from the group consisting of processing the portion as a workpiece of an electric spark machine with a tool electrode of Si in a liquid including alkane hydrocarbons, and processing the portion as a work piece of an electric spark machine with a tool electrode of one or more filler materials selected from the group consisting of SiC and MoSi₂.

Claim 65 (New): A component of a turbine engine, comprising:
a main body having a portion to be processed;
a base coating coated on the portion;
a protective coating coated on the base coating and the intermediate substance, the protective coating including one or more protective materials selected from the group consisting of oxide ceramics, cubic BN, and oxidation-resistant metals, and being formed by processing the portion as a workpiece of an electric spark machine with a tool electrode; and
a filler including amorphous SiO₂ filled in pores of the protective coating.

Claim 66 (New): The component of claim 65, wherein the oxidation-resistant metals are selected from the group consisting of NiCr alloys and M-CrAlY alloys, wherein M represents one or more metal elements selected from the group consisting of Co and Ni.

Claim 67 (New): The component of claim 65, wherein the portion is selected from the group consisting of a tip end portion of a turbine rotor blade, a pressure sidewall of a rotor blade, a suction sidewall of a rotor blade, and a tip seal of a shroud.

Claim 68 (New): The component of claim 65, wherein the base coating is formed by processing the portion as a workpiece of an electric spark machine.

Claim 69 (New): A method for production of a surface-treated component of a turbine engine, comprising:

forming a base coating on a portion of an untreated component by processing the portion as a workpiece of an electric spark machine with a tool electrode of an oxidation-resistant metal;

forming an intermediate coating coated on the base coating, the intermediate coating including one or more filler materials selected from the group consisting of SiC and MoSi₂, the intermediate coating being formed by any process selected from the group consisting of processing the portion as a workpiece of an electric spark machine with a tool electrode of Si in a liquid including alkane hydrocarbons, and processing the portion as a work piece of an electric spark machine with a tool electrode of one or more filler materials selected from the group consisting of SiC and MoSi₂; and

forming a protective coating coated on the base coating and the intermediate substance by processing the base coating and the intermediate substance as a workpiece of an electric spark machine with a tool electrode of one or more protective materials selected from the group consisting of oxide ceramics, cubic BN, and oxidation-resistant metals.

Claim 70 (New): The method of claim 69, wherein the oxidation-resistant metals are selected from the group consisting of NiCr alloys and M-CrAlY alloys, wherein M represents one or more metal elements selected from the group consisting of Co and Ni, and the oxide ceramic is yttria-stabilized zirconia.

Claim 71 (New): A component of a turbine engine produced by the method of claim 69.

Claim 72 (New): A method for production of a surface-treated component of a turbine engine, comprising:

forming a base coating on a portion of an untreated component by processing the portion as a workpiece of an electric spark machine with a tool electrode of an oxidation-resistant metal;

forming a protective coating coated on the base coating and the intermediate substance by processing the base coating and the intermediate substance as a workpiece of an electric spark machine with a tool electrode of one or more protective materials selected from the group consisting of oxide ceramics, cubic BN, and oxidation-resistant metals; and

closing pores of the protective coating by filling a powder of SiO_2 or MoSi_2 into the pores and heating the portion enough to change the powder into amorphous SiO_2 .

Claim 73 (New): The method of claim 72, wherein the oxidation-resistant metals are selected from the group consisting of NiCr alloys and M-CrAlY alloys, wherein M represents one or more metal elements selected from the group consisting of Co and Ni, and the oxide ceramic is yttria-stabilized zirconia.

Claim 74 (New): A component of a turbine engine produced by the method of claim 72.

Claim 75 (New): A method for production of a surface-treated component of a turbine engine, comprising:

forming a coating including SiC coated on a portion of an untreated component by processing the portion as a workpiece of an electric spark machine with a tool electrode of Si in a liquid including alkane hydrocarbons.

Claim 76 (New): A component of a turbine engine produced by the method of claim 75.